

You Rule!

Teaching the World How to Accelerate Multi-Corridor Project Delivery

Intermountain West Region
GIS Meeting, Denver CO (SHRP2 Project)

Kevin Moody
FHWA, Infrastructure Ecologist
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Thank You

This Project is Internationally Significant

- Innovative
 - improvement in energy use, material, or process
 - Applicable to rural & urban households
- High ROI
 - Local Regional & Global Knowledge Economy

The World's 16th Largest Economy





Managing Uncertainty

“[I]t is possible to improve on common sense” by methodically focusing on the package of premises and results, by calculating with beliefs.

Dennis V. Lindley

Managing Uncertainty

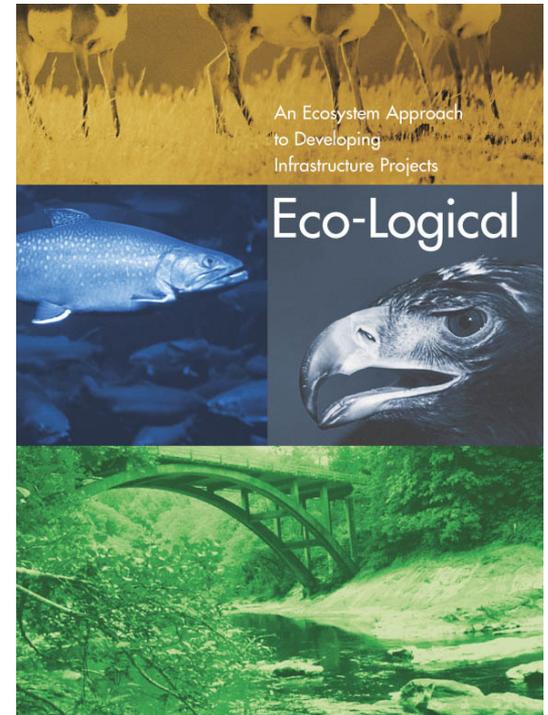
- **Applied Ecology – Science & Principles**
 - Solutions are more robust (so far) than silos of excellence
 - Manage Node Quality by Adjusting Flows
 - Nodes (Hubs) are Micro-Habitats (e.g., Street Segments)
 - Scalable (Habitat Mosaics)
 - Adjust Flows of Energy, Information, Matter to Nodes
 - Micro-Habitats are Street Segment Level!
 - Useful Principles (e.g., response to physical forcing)

What You are Pioneering

Regional Ecosystem Framework

– Applied Ecology

- Structured Decision Making
- Adaptive Management
- Performance-Based Solutions
- Transportation = means to ends
 - NOT an end unto itself
 - Lifeline Infrastructures
 - » Multi-Sector Asset Management
 - » Abstract to Real-World
 - » Flows of energy, information, matter



Ecological Approach

Multi-Objective Decision Making

- Oops (Grizzly Bear Migration Corridor)
- Work Smarter using Lessons Learned
 - Regional Ecosystem Framework
 - “needs” are transparent
 - Make logically coherent decisions under uncertainty

Ecological Approach

Multi-Objective Decision Making

- SHRP2 (4 legged stool)
 - Capacity
 - Accelerate Project Delivery!
 - Natural Resources Perceived as Threat to Project Delivery Schedules
 - Push to rationalize advanced mitigation
 - Integrated Ecological Framework

Ecological Approach

Multi-Objective Decision Making

- REF and IEF ...
 - Link Planning & NEPA
 - Deliver Better Transportation Projects, Faster and with Fewer Extraneous Costs

Ecological Approach

Urban Ecological Pilots

Chicago – Pilsen Neighborhood

Complete Streets Initiative

- Street improvement
 - Included stormwater renewal
 - Which reduced basement flooding
 - And quickly improved children's health
 - Correlated with improved academic achievement
- Area is now an Employer magnet

Ecological Approach

Urban Ecological Pilots

Atlanta – west side

Community-led Transformation

- Employers concerned about absentee rates & claims
- Agencies developing REF to coordinate data, designs, and actions
- Social Complexity objective tailored for community
 - “Innovation Ecosystem”

Ecological Science

and Social Complexity

Renew or Improve ...

Lifeline Infrastructures

- **Electric Power Supply**
- **Telecommunications**
- **Transportation**
- **Waste Stream**
- **Water Supply**

To Change:

- **Amount** – a change in overall amount (stock)
- **Pace** – a change in the rate
- **Location** – a change in the direction or location
- **Pattern** – a change in the type (density; use)

Social Complexity

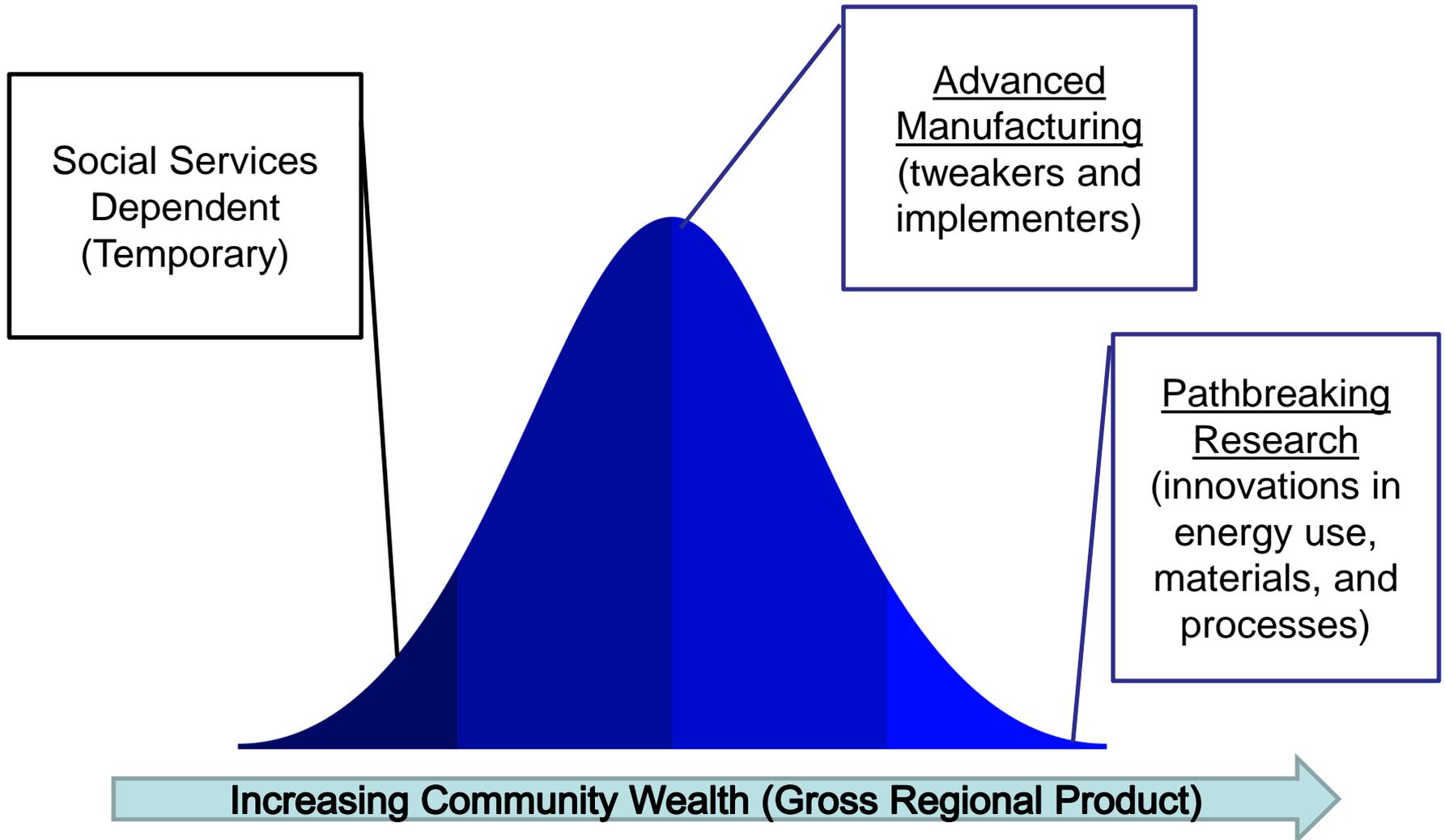
Fundamental Objective: “Innovation Ecosystem”

Four Domains

- Workforce Capacity
 - 3R’s plus teamwork
 - Lifelong Learning
- Business Recruitment
 - Full Employment (Industrial Sector Diversity)
 - Better-Than-Living Wages
 - Fulfilling Jobs
- Green Infrastructure
 - Life cycle asset management
 - Park Oriented Development
- Community Efficacy
 - The Fabric of the Community
 - People come and go (culture/character of place matters)
 - Community Cohesion/civic association leaders

Social Complexity

Intervention Strategies for the Innovation Ecosystem



Thank You Again

This Project is Significant to U.S. DOT

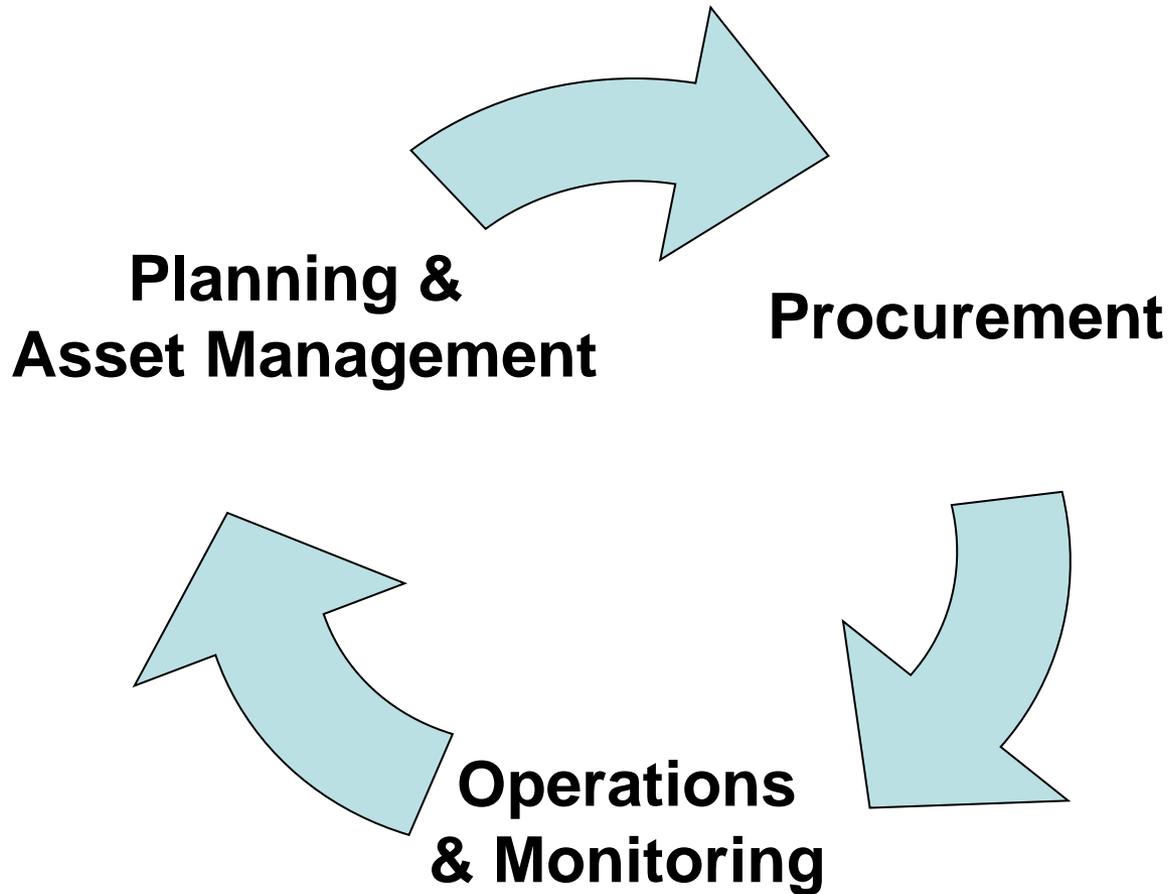
- Driven by Performance-Focused Teams
 - Leaves Bureaucrats in the Dust
- Sets the Bar
 - Accelerate Project Delivery!
 - Link Planning & NEPA
 - Deliver Better Transportation Projects, Faster and with Fewer Extraneous Costs

Innovative Leadership



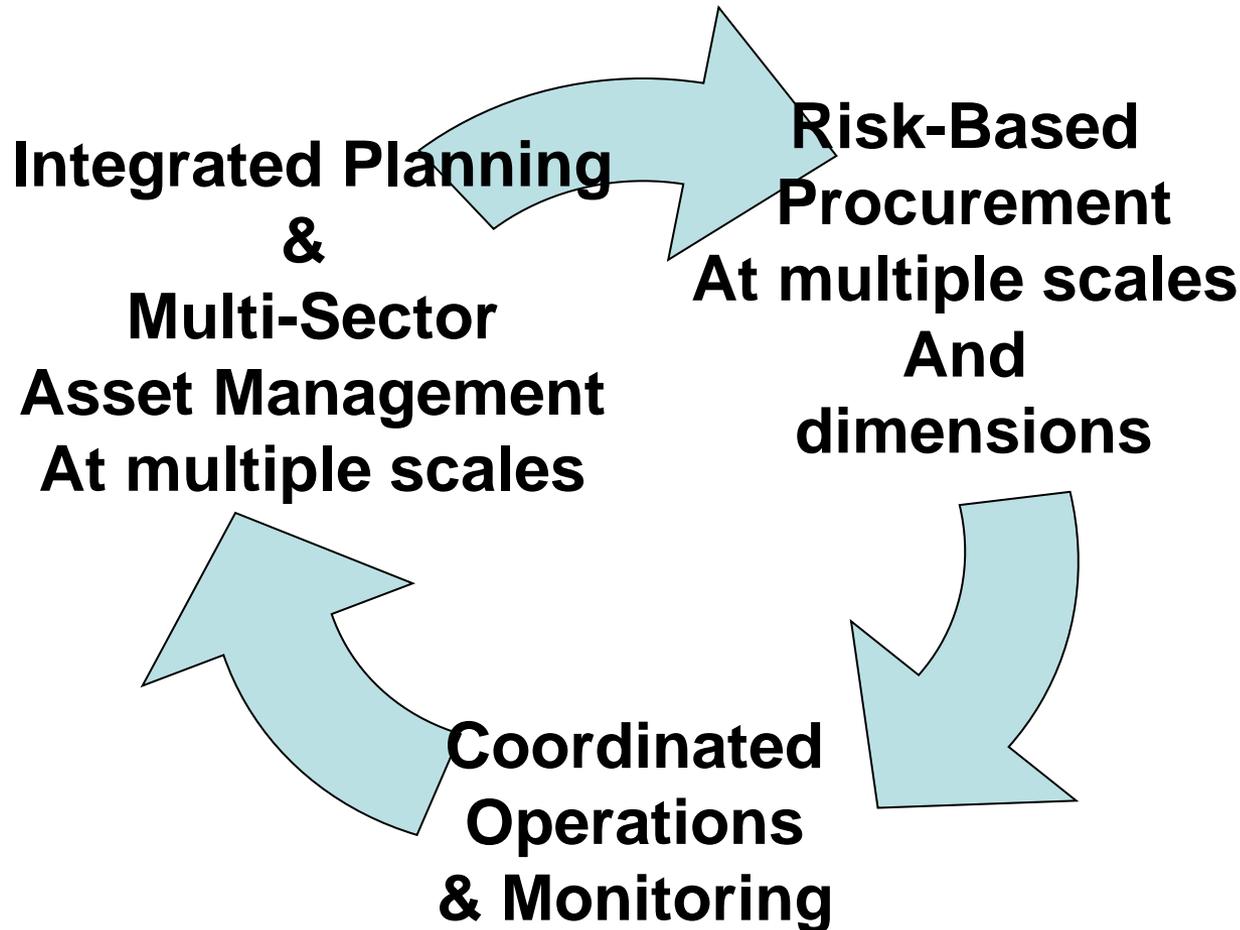
The ‘Land Between’ [T]he metros must form stronger internal linkages that will define the region in the global marketplace while also building stronger connections to the two adjacent powerhouse regions. (Source: MG&A, 2015)

Business as Usual Silos of Excellence



What You are Pioneering

Innovative, Transparent, Logically Coherent
Process



Risk Register

Risk Registers are a communications platform that allow us to:

- **Focus limited resources** – focus staff and budget resources to maximize opportunities and minimize events that threaten objectives;

Risk Register

Risk Registers are a communications platform that allow us to:

- **Strengthen the ability to efficiently manage program and project delivery** – make informed decisions about the scope, approach, and intensity of regional partner efforts;

Risk Register

Risk Registers are a communications platform that allow us to:

- **Improve communication and manage risk corporately** – communicate consistently to collaborators about what asset owners should individually and collectively focus on and why; and,

Risk Register

Risk Registers are a communications platform that allow us to:

- **Reduce extraneous costs** – apply a logically coherent Bayesian approach to prioritizing information needs, improving the base of knowledge, and resolving those uncertainties that trigger delay and cost inefficiencies.

Risk Register

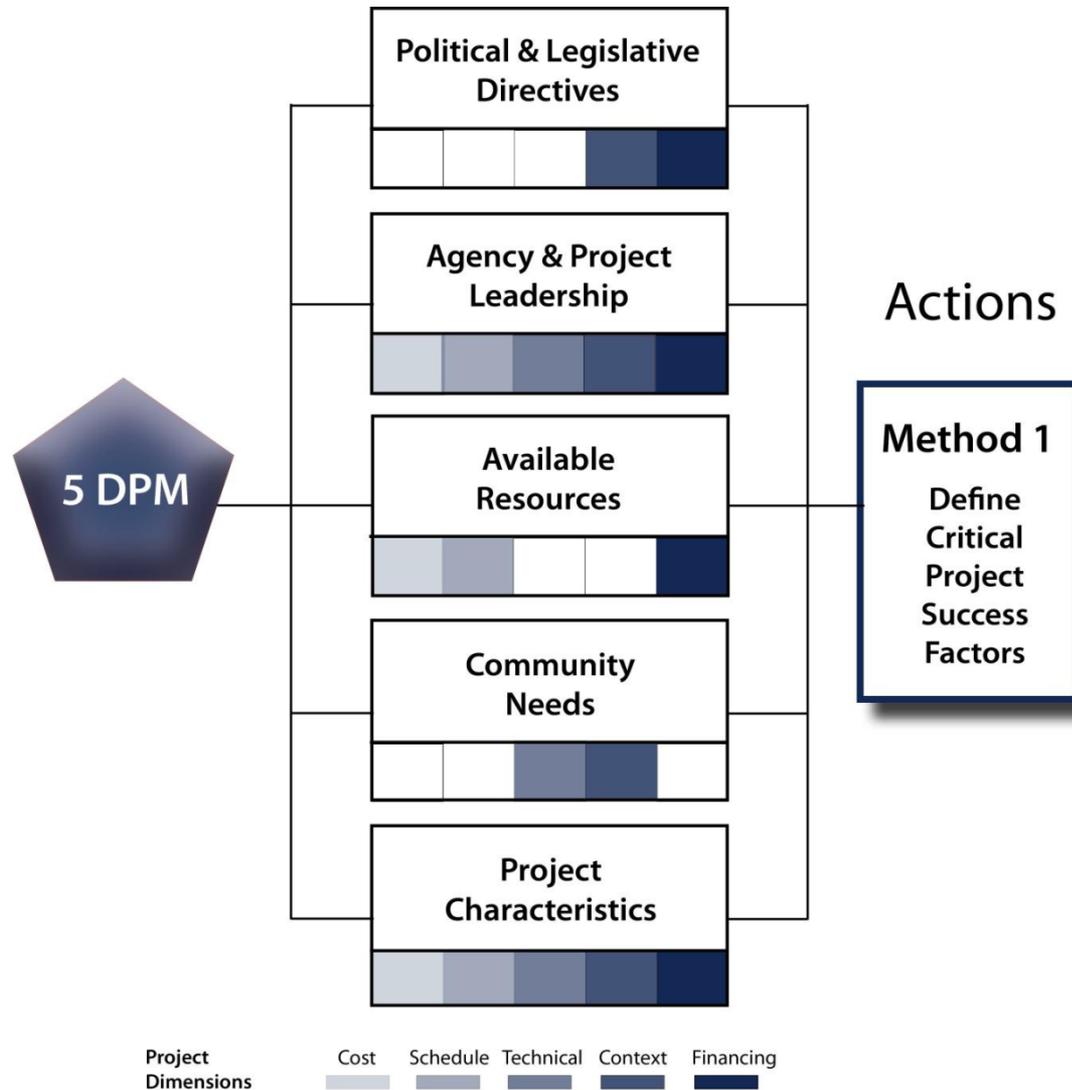
- Risk management is above all else an exercise in continuous learning and applied communications
- Building the institutions and tools that allow for trust, good faith, and mutual support is a function of communications and consultation.

Risk Register – SWOT Analysis

Atlanta west side

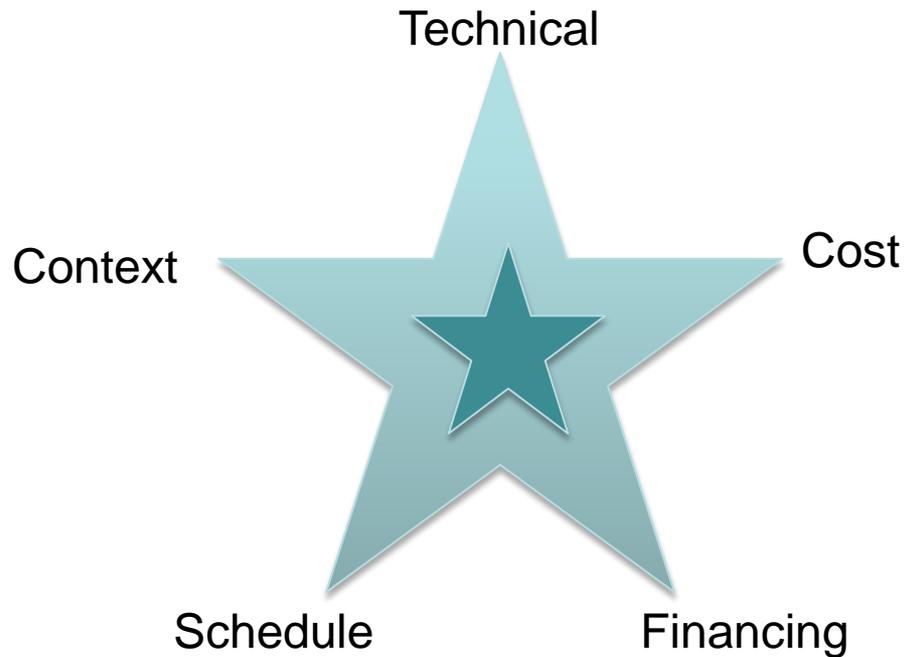
Internal	Strengths	Weaknesses
	<ul style="list-style-type: none">• World class faculty• Engaged Students	<ul style="list-style-type: none">• Definition of “Good Alum”• Few Faculty projects that drive IPs that feed into businesses• No Student projects that lead to companies
External	Opportunities	Threats
	<ul style="list-style-type: none">• GSU’s JV offer• Public Sector NEPA process• PC study	<ul style="list-style-type: none">• No “intellectual asset enhancement” connectivity• No “meeting spaces” or “IdeaHubs”• Public Sector investments in Midtown

Risk Register and Complex Projects



Risk Register

5 Dimensions of Complex Project Management



Single Owner Risk Register

(traditionally inward-looking)

	Technical	Cost	Context	Financing	Schedule
Replace Bridge 10	Green	Red	Light Green	Yellow	Green
ITS Smith Rd	Light Green	Light Green	Light Green	Yellow	Red
Rockfall Protection Canyon5	Red	Green	Light Green	Green	Green
Resurface Exit 5	Green	Light Green	Red	Light Green	Yellow

Regional Risk Register

Track-a-Parameter

	Technical	Cost	Context	Financing	Schedule
CA I-70 realign		I-beam slide cost escalation			
AZ I-10 updates	I		I-beam acoustical signature & bats		
CO Durango loop		I-beam alternative			
UT I-15 bridge replace					I-beams (Port of LA)

Regional Risk Register

Hypothetical SWOT for Reno's Logistic Cluster goal

Opportunity	Threat	Owner	Rationale
I-10 e-scales reduce delays		ADOT	Low TIP rank
	Workforce shortage	Reno public schools	Truancy response via judicial system
	I-70 congestion xpands	Sacramento	Driverless cars increases # VMT and induces growth

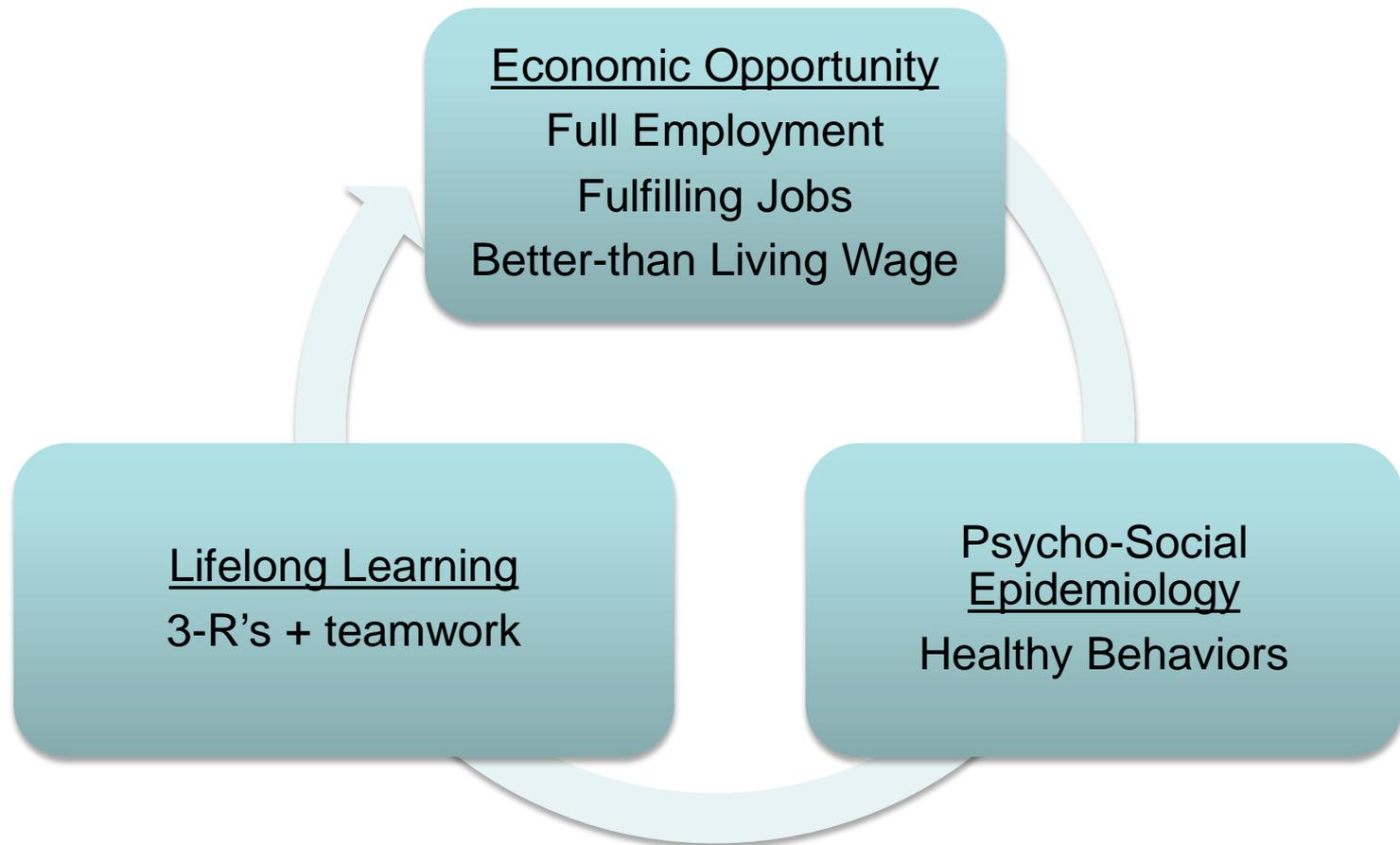
Thank You Yet Again

This Project adds value for Our Children

- Primary Theme:
 - Infrastructure is a means to ends; not an end unto itself
 - Silos of Excellence = Wasteful
 - Multi-Sector Asset Management = Efficient
- Secondary Themes
 - Fundamental Objective is Quality of Life
 - Tailor Social Complexity by Community

Social Complexity

Workforce – Business ROI Feedback Loop Example



What You are Pioneering

- Reverse Engineer NEPA impact analyses to Planning
- Regional Ecosystem Framework
 - Learning Organization
 - Nested “Ends” (Fundamental Objectives)
- Complex Project Management
- Risk Registers
 - Communications Platforms
- Collaborative Enterprise
 - Multi-org management systems

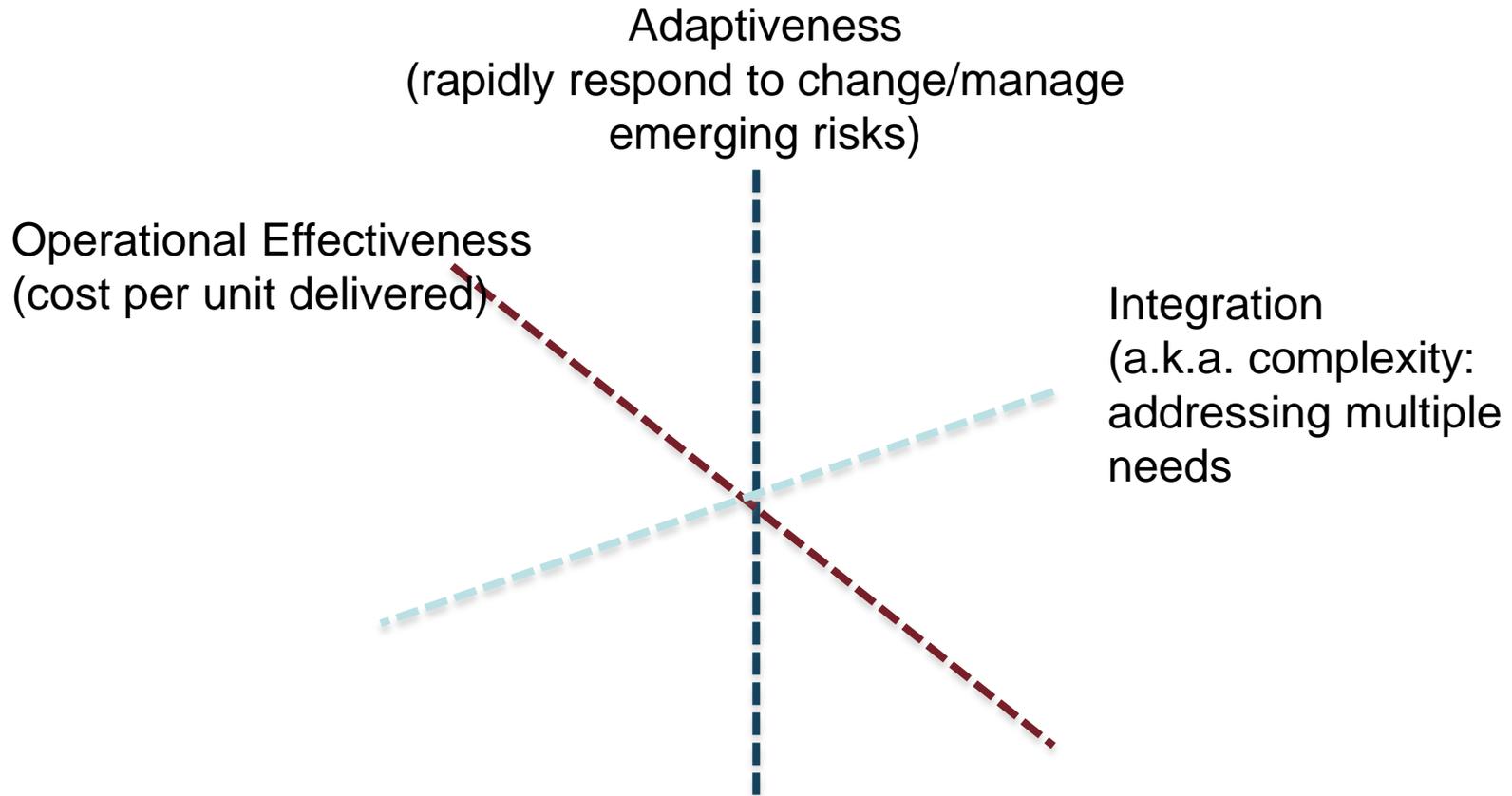
Linking Planning & NEPA

environmental impact analyses

Old School

	Intensity	Context
Impact Strategy	Action-Focused	Resource-Focused
Impact Category	Direct, Indirect	Cumulative
Mitigation Strategy	Reduce Intensity	Increase REC Resilience
Mitigation Category	Avoid, Minimize	Compensate, etc.

Collaborative Enterprise Knowledge-Product Business Line



Terms and map concept from Heckscher et al

Collaborative Enterprise Knowledge-Product Business Line

Management Systems

- Deploy platforms and processes that facilitate
 - Knowledge sharing
 - Vertical and horizontal alignment
- Focus on generating and sharing knowledge that
 - Drives behaviors and practices
 - Overcomes institutional barriers
- Deliver best value to public



Collaboration

Interpersonal Differences

- Critical Thinking is Counterintuitive
- We prefer stories to statistics
- We seek to confirm what we believe to be true
- We don't appreciate the role of chance and coincidence in life
- We misremember
- We oversimplify
- We misperceive our world



Collaboration

The difference between the right word and the almost right word is the difference between lightning and the lightning bug.

attributed to Mark Twain



You Rule!

Teaching the World How to Accelerate
Multi-Corridor Project Delivery

Intermountain West Region GIS meeting

Thanks!